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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,179	07/01/2002	Masayoshi Noguchi		8894

7590 12/23/2005  
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EXAMINER

VLAHOS, SOPHIA

ART UNIT PAPER NUMBER

2637

DATE MAILED: 12/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/088,179	NOGUCHI ET AL.	
	Examiner	Art Unit	
	SOPHIA VLAHOS	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-13 is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☒ Claim(s) 2-6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                                                |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                           | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/13/2004</u> . | 6) <input type="checkbox"/> Other: _____                                                |

## **DETAILED ACTION**

### ***Priority***

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

### ***Specification***

2. The abstract of the disclosure is objected to because it is over 150 words. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichimura et. al. (U.S. 5,835, 042) in view of Nishio et. al., (U.S. 5,574,453) and further view of Nuijten (U.S. 6,507,299).

With respect to claim 1, Ichimura et. al., disclose: phase modulating means for phase-modulating the one-bit signals as original signals to add data of inverted phases to the one-bit signals (Fig. 2, Fig. 4E, Fig. 2 shows the output of  $\Sigma\Delta$  modulator is coupled to phase modulator, column 3, 4, lines 57-67, 9-42).

Ichimura et. al., does not expressly teach: information data adding means for adding information data that are related to the one-bit signals to the phase modulated one-bit signal data having the data of inverted phases added by rearranging the data of inverted phases based on a plurality of m channel units of the n channels wherein  $n \geq m \geq 2$ .

In the same field of endeavor, Nuijten discloses: information data adding means (Fig. 2, elements 2, 3) for adding information data (column 3, lines 34-41) (information data refers to the embedded watermark bits). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the modification and control circuit of Nuijten to add the watermark bits in the system of Ichimura et. al., because the teachings of Nuijten allows for extraction of the supplemental data (e.g. watermark information that could include information about copyright, legal proof of ownership, and protect against piracy) in a more cost effective way (columns 1, 2, lines 16-24, 9-13).

In the same field of endeavor, Linnartz et. al., discloses: a plurality of m channel units of the n channels (Fig. 1, elements 501, modification circuits 3, 4)(where the plurality of m channel units are the modification units, n channels are the input bit streams representing the left and right channel bit streams, (column 6, lines 14-18)).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the system of Linnartz et. al., (register, modification circuits, and output mux) in the system of Ichimura et. al., because it can accommodate the audio signal's left and right channel signals.

***Allowable Subject Matter***

5. Claims 2-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Reasons for Allowance***

6. The prior art of the record fails to teach or suggest alone or in combination: a digital signal encoding method for encoding one-bit signals of a plurality of  $n$  channels,  $n$  being equal to at least two, and the one-bit signals being modulated in a delta-sigma manner, the method comprising the steps of:

converting the data of inverted phases in the region in accordance with the phase-modulated one-bit signal data; and making (the) numbers of one-bit data 1's and one bit data 0's in the predetermined period that are generated when the synchronization patterns are added by the synchronization signal adding step equal to each other by converting the data of inverted phases in a region of the predetermined period such that the difference between the numbers of 1's and 0's is zero, as recited in independent method claim 7, and in combination with other elements of the claims.

7. The prior art of the record fails to teach or suggest alone or in combination: a digital signal decoding apparatus comprising: converting the data of inverted phases in the region in accordance with the phase-modulated one-bit signal data; information data detecting means for detecting the information data by judging insertion positions of the

data inverted phases, as recited in independent apparatus claim 11, and corresponding method claim 12, and in combination with other elements of the claims .

8. The prior art of the record fails to teach or suggest alone or in combination: a digital signal decoding apparatus that detects the information data by judging the insertion positions of the data of inverted phases as recited in independent apparatus claim 13, and in combination with other elements of the claim.

9. Claims 7-13 are allowed.

***Other prior art cited***

10. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

Nishio et. al., (U.S. 5,574,453) discloses a digital recoding apparatus with a signal frame that includes a synchronization pattern (header), information data, error-correction signal.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SOPHIA VLAHOS whose telephone number is 571 272 5507. The examiner can normally be reached on MTWRF 8:30-17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JAY PATEL can be reached on 571 272 2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SV  
12/21/05



JAY K. PATEL  
SUPERVISORY PATENT EXAMINER